## CLAIMS

1. A mixer device for materials, notably made up of various divided solid waste in a vertical silo, characterized in that it includes:

- a central working area extending along the entire height of the silo (1) and a peripheral zone,
- means (6) vertically distributed at various successive levels ($n_1$, $n_2$, $n_3$ ... $n_{21}$) of the working area, along the entire height of the silo, capable of lifting the material from each of the levels of the working area and of releasing it,
- means (1a, 19) capable of bringing the material from the upper portion of the peripheral zone to the lower central portion of the silo (1).

2. The device according to claim 1, characterized in that the silo (1) is of a cylindrical shape, and the working area also has the shape of a cylinder coaxial with the silo, the lifting means consist of a vertical shaft (3) which coincides with the axis of the silo (1), which performs a movement of rotation and which is provided at each of said levels with at least one blade (6), the radius (r) of which defines that of the working area and which has an angle of incidence ($\alpha$) relatively to the plane of the cross section (S) of the silo, this blade (6) being tilted from the bottom upwards and on the side towards which it is brought by the rotational movement towards the opposite of the latter.

3. The device according to claim 2, characterized in that the rotational velocity of the shaft (3) is of the order of five to ten revolutions per minute.

4. The device according to any of the preceding claims, characterized in that the blades (6) consist of planar components in the shape of sectors, with a centre angle ($\delta$) between 20 and 120°.

5. The device according to any of claims 2 to 4, characterized in that the angle of incidence ($\alpha$) of the blades (6) is of the adjustable type.

6. The device according to any of claims 2 to 5, characterized in that the dimension, in the radial direction, of a blade (6) is substantially between the fifth and the third of the radius (R) of the silo.

7. The device according to any of claims 2 to 6, characterized in that the shaft (3) is provided with a single blade (6) per level and the blades (6) of two successive levels are shifted angularly relatively to each other by an angle of about 90°.

8. The device according to any of the preceding claims, characterized in that the means capable of bringing the material from the upper portion of the peripheral zone to the lower central portion of the silo (1) are of the static type and consist of a bottom (1a) with a frustro-conical shape.

9. The device according to any of claims 1 to 7, characterized in that the means capable of bringing the material from the upper portion of the peripheral zone to the lower central portion of the silo (1) are of the dynamical type and consist of scraping components (19) firmly attached

to the rotary shaft (3) which are applied onto the internal wall of the base (1a) of the silo (1).

10. The device according to any of the preceding claims, characterized in that the silo (1) includes loading means (9) through its upper portion.

11. The device according to any of claims 1 to 9, characterized in that the silo (1) includes loading means through its lower portion, notably consisting of a worm-screw (11).

12. The device according to claim 11, characterized in that the loading means may also act as unloading means.

13. The device according to any of the preceding claims, characterized in that the silo (1) is provided with heat insulation means relatively to the outside world.

14. The device according to claim 13, characterized in that the silo (1) is provided with heating means.

15. The device according to any of the preceding claims, characterized in that the silo (1) includes means for introducing (20) and/or extracting fluids.

16. A method for ensuring mixing of materials notably made up of various divided solid waste in a vertical silo (1), characterized in that it includes the steps:

- lifting the material from different successive levels ($n_1$, $n_2$, $n_3$ ... $n_{21}$) of a central zone of the silo (1) and releasing it,

- bringing the material from the upper portion of the peripheral zone of the silo to the lower central portion of the latter.

17. The method according to claim 16, characterized in that the silo is used as a reactor (1) in order to apply therein at least one physical and/or chemical treatment process.

18. The method according to claim 17, characterized in that the process is a process for making compost.